

From the INTERNATIONAL SEARCHING AUTHORITY

To:

JEAN C. EDWARDS
SONNENSCHN NATH & ROSENTHAL
1301 K STRETT, NW 6TH FLOOR, EAST TOWER
WASHINGTON, DC 20005

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

	Date of Mailing (day/month/year) 23 SEP 2002
Applicant's or agent's file reference 097923509999	FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/US02/19562	International filing date (day/month/year) 20 June 2002 (20.06.2002)
Applicant ARRYX, INC.	

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34, chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90 bis.1 and 90 bis.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Commissioner for Patents Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer KAVEH KIANNI Telephone No. (703) 305-4770
---	--

Form PCT/ISA/220 (April 2002)

(See notes on accompanying sheet)

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 097923509999	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US02/19562	International filing date (<i>day/month/year</i>) 20 June 2002 (20.06.2002)	(Earliest) Priority Date (<i>day/month/year</i>) 20 June 2001 (20.06.2001)
Applicant ARRYX, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the Report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the abstract,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. 4



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

NEW ABSTRACT

Our invention relates generally to an optical switch (31) and optical router (10) to rapidly route signals from particular channels (22, 24) within an optical band by using optical switches (20) which utilize a controlled whispering gallery mode "WGM" resonance of dielectric microspheres (S1, S2, S3) to optically switch signals. Another invention relates to optical filters (100, 200) which use a WGM resonate structure (150) to isolate and switch specific optical signals between waveguides (F1, F2). In other inventions, the filter (100) is switched "on/off" by signal loss within a WGM resonate structure (150) which disrupts the WGM resonance; the filter (100) isolates and switches a specific wavelength signal from among a group of signals of different wavelengths; and is switched "off" by adjusting the index of refraction of the resonate structure to become substantially similar to the index of refraction of the surrounding medium.

INTERNATIONAL SEARCH REPORT

International application N .

PCT/US02/19562

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G02B 6/28

US CL : 385/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 385/163, 24, 27, 32, 40, 1, 2, 8, 9, 14, 39, 40, 41, 47, 131, 132, 83, 328; 359/326, 342

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONEElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
USPAT EPO JPO DERWENT**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,052,495 A (LITTLE et al) 18 April 2000 (18.04.2000), column 3, line 1 - column 8, line 33.	1-426, second 426, 427-428
Y	US 4,720,160 A (HICKS, JR.) 19 January 1988 (19.01.1988), column 1, line 1 - column 21, line 52.	1-426, second 426, 427-428
Y	US 5,875,272 A (KEWITSCH et al) 23 February 1999 (23.02.1999), column 1, line 1 - column 11, line 51.	1-426, second 426, 427-428
Y	US 5,926,496 A (HO et al) 20 July 1999 (20.07.1999), column 1, line 19 - column 11, line 22.	1-426, second 426, 427-428
Y	US 6,101,300 A (FAN et al) 08 August 2000 (08.08.2000), column 1, line 18 - column 23, line 40.	1-426, second 426, 427-428
Y	US 6,009,115 A (HO) 28 December 1999 (28.12.1999), column 1, line 1 - column 11, line 22.	1-426, second 426, 427-428
Y	US 5,939,716 A (NEAL) 17 August 1999 (17.08.1999), column 1, line 16 - column 8, line 51.	1-426, second 426, 427-428



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

27 July 2002 (27.07.2002)

Date of mailing of the international search report

23 SEP 2002

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

KAVEH KIANNI

Telephone No. (703) 305-4770

Kaveh Kianni

INTERNATIONAL SEARCH REPORT

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,952,651 A (MORITO et al) 14 September 1999 (14.09.1999), column 1, line 5 - column 16, line 7.	1-426, second 426, 427-428
Y	WO 00/3557 A2 (VAHALA) 15 June 2000 (15.06.2000), page 1, line 1 - page 21, line 10.	1-426, second 426, 427-428
Y	WO 00/29886 A1 (VAHALA et al) 25 May 2000 (25.05.2000), page 1, line 10 - page 16, line 10.	1-426, second 426, 427-428
Y	WO 99/39223 A1 (GRIER et al) 05 August 1999 (05.08.1999), page 1, line 1 - page 8, line 21.	1-426, second 426, 427-428
Y	WO 98/53535 A1 (HO et al) 26 November 1998 (26.11.1998), page 1, line 10 - page 22, line 7.	1-426, second 426, 427-428
Y	CAI et al., Highly Efficient Optical Power Transfer to Whispering-Gallery Modes by Use of a Symmetrical Dual-coupling Configuration, No. 25, 15 February 2000, Dept. of Applied Physics, pages 260-262.	1-426, second 426, 427-428
Y	CAI et al., Fiber Optic Add-Drop Device Based on a Silica Microsphere-Whispering Gallery Mode System, No. 6, June 1999, IEEE Photonics Technology, page 686, see first column, line 1 - page 687, second column line 44.	1-426, second 426, 427-428
Y	CAI et al., Observation of Critical Coupling in a fiber Taper to a Silica-Microsphere Whispering-Gallery Mode System, Vol. 85, 03 July 2000, Dept. of Applied Physics, Page 74-77.	1-426, second 426, 427-428
Y	CHIOU et al., Interferometric Optical Tweezers, No. 133, 01 January 1997, Optics Communications, Pages 7-10.	1-426, second 426, 427-428

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty and of the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended ?

The claims only.

The description and the drawings may only be amended during international preliminary examination under Chapter II.

When ? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments ?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How ? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

What documents must/may accompany the amendments ?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confounded with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.